A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the NOVA – School of Business and Economics.

SOLAREDGE TECHNOLOGIES, INC.
EQUITY RESEARCH

STRONG GROWTH BOOSTS VALUATION

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A Project carried out on the Master in Finance Program, under the supervision of:

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Abstract
The following equity research is conducted with the objective of computing the value of SolarEdge Technologies, Inc.
After that all the necessary cost of capitals, a 7.66% WACC and a 4.69% nominal growth rate were computed, the discount cash flow valuation method was applied finding a target price of $409,37, corresponding to a +28.33% increase from the current price of $319.
The higher price can be described by the ability of the company to increase its market shares in the different geographical areas, maintaining a leading position in the market for the upcoming years without being negatively affect by the current market conditions.

Keywords – SolarEdge, discounted cash flow valuation, weighted average cost of capitals, multiples valuation

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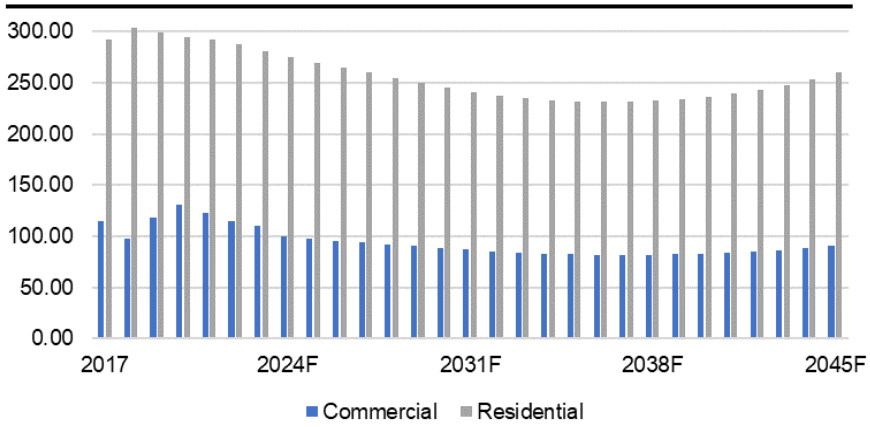
Forecasts

- Inflation

Regarding the historic price developments of PV, a drastic decrease in prices was experienced. This strong decrease was fueled by several factors. First, governments pushed on subsidizing solar technology, which created a strong competition in the market, leading to high investments in R&D that advanced the technology of inverters. According to BloombergNEF, the price for PV modules will continue to decrease by 44% until 2030 and that for each doubling of capacity, the price of modules lowers by 28.5%. BloombergNEF also mentions that for SolarEdge the price decreases by 13% once doubling the capacity for an inverter. Therefore, the difference in price decrease was calculated for inverters and discounted the 44% decrease to 20.1%. Additionally, it was assumed that by 2045 the price will start to increase again by the general inflation rate (Exhibit 40). Therefore, from 2030 inflation will slowly increase until reaching 2045.

Exhibit 40: Price development (in $ of revenue per KW)



Source: BloomberNEF, analyst estimates, central bank websites

Cost of Revenues

The cost of revenues is highly dependent on the revenues. The management believes that, looking ahead, the margin will stabilize at 36%. However, the acquisitions outside of the solar industry are expected to have tighter margins, reducing the 36% to 33% in the future.

Operating Expenses

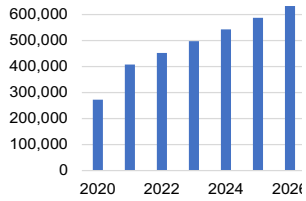
SolarEdge's operating expenses grew slightly above revenues. Compared to a revenue growth of 42.8% in the past three years, operating expenses increased by 47.7%. Although sales and marketing grew at a slower rate, G&A and R&D rose stronger than the revenues. G&A and other operating expenses have had such a strong impact on 2019, due to the recent acquisitions. It is expected that the firm will be able to reach again the OPEX (% of revenues) 15% in the next five years[1]. This value also reflects the long-term goal set by the management.

[1] Source: Company analyst day presentation

CAPEX

SolarEdge outsourced most if its production to contract manufacturers instead of building their own manufacturing infrastructures. The contract manufacturers are in charge of covering and funding the capital expenses with the exceptions of the end-of-line testing equipment and other specific equipment. This business model enables SolarEdge to fund its current and projected capital expenses fully with its cash flows and with an overall capital light budget.

Exhibit 41: Forecasted PPE



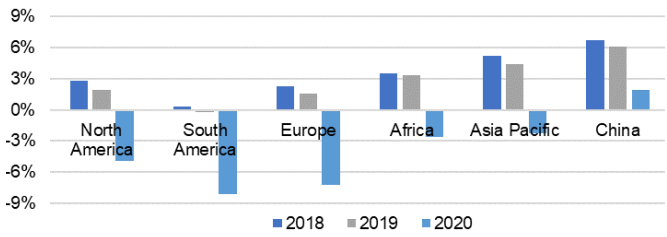
Source: Analyst estimates

It is expected that the firm will maintain this outsourcing strategy, as declared more than once by the company's management. More straightforward, in the analyst day presentation released by SolarEdge the capital expenditures are forecasted for Q4 and full 2021. In this presentation, SolarEdge stated $45M per year for purchases of new manufacturing and testing equipment, $50M in Q1 of 2020 for the new Sella 1 factory and $90M for the expansion of the acquired Kokam factory (Exhibit 41). It was assumed that the expenses related to the expansion of the new Kokam factory will fully incur in 2021. Furthermore, it was forecasted by estimating that PPE will weight 16% of the revenues, reaching the levels of PPE before the latest acquisitions. Overall, it is not expected that SolarEdge will expand through self-owned factories.

Economic Overview

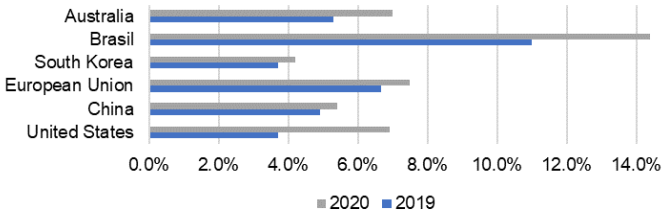
The global economy has experienced a tremendous downturn in 2020. After the major drop due to the COVID-19 pandemic, the economy is recovering slowly with nations still implementing lighter lockdowns to reduce the outbreak. The IMF projected the global real GDP growth for 2020 to be around -4.4% with a recovery in 2021 of 5.2%, but not reaching the estimated levels of pre-COVID-19 expectations. However, looking at China, the recovery is going a lot faster than expected (Exhibit 42). The news of a vaccine for the virus has created a positive outlook for the economy. Pfizer and BioNTech have developed a vaccine that is found to be more than 90%[2] effective. The companies announced that 50M doses can be manufactured in 2020 and 1.3B in 2021.

Exhibit 42: Real GDP growth by region



Source: IMF, World Economic Outlook

Exhibit 43: Unemployment rate by country



Source: Statista, Trading Economics, Bureau of Labor Statistics, Eurostat, Australian Bureau of Statistics

Exhibit 44: Prices of Energy Sources, 2020 (in $/MW)

Energy Sources	Low	High	Average
Solar PV - Utility	31	42	37
Wind	26	54	40
Gas Combined Cycle	44	73	59
Coal	65	159	112
Solar PV - Commercial	74	179	127
Solar Thermal	126	156	141
Nuclear	129	198	164
Gas Peaking	151	198	175
Solar PV - Residential	150	227	189

Source: Lazard

SolarEdge relies a lot on the global economy, as the company has customers across the globe. Especially, the situation in China for the production of its inverters is important to understand. However, the circumstances in all the regions across the globe determine the revenues. Unemployment has suffered a lot from the COVID-19 pandemic in 2020 (Exhibit 43). The US unemployment rate in October 2020 went up to 6.9%, which is an 86% increase. China, South Korea, and the EU had a comparably smaller increase ranging from 10-14%. Regarding the energy prices, Lazard shows that solar energy is leading the ranking for the cheapest energy

[2] Source: Financial Times

source (Exhibit 44). Therefore, solar energy serves as a fall back even in times of current economic downturn.

A strong impact in the industry were also the trade tariffs imposed especially in the U.S. as a reaction to the trade war with China. Import taxes on solar equipment from China were increased in summer 2019 from 10% to 25%[3], causing strong increases in costs for many companies. For SolarEdge this meant an increase of $67.7M[4] in costs of revenue from tariffs and logistics costs. However, the company was able to maintain its gross margin in the U.S. by increasing the price of its inverters.

Subsidies

Subsidies played a vital role in the global development of the solar industry. For many years, the energy produced by the solar panels was more expensive compared to the traditional energy generation methods as coal, gas and nuclear. Governments decided to support the growth of the renewables sector through tax incentives in order to decrease the costs of expensive technologies and increase the production of renewable energy. The main two types of incentives used by the governments are: The Investment Tax Credit (ITC) used by the U.S. government and the Feed-In-Tariff (FIT) introduced by the main countries in Europe and in Asia.

Many different studies showed that these subsidies positively impacted the growth of the solar industry. In the U.S., rebates show that an additional dollar per watt increase would rise the overall PV installation capacity by 47%. Additionally, in China, it was computed that an increase of 0.1 yuan/kWh in subsidies adds around 18 GW/year of installed capacity. Consequently, the prices for solar PV modules went down by 90% from 2009 thanks to the advancements in technology and the effects of the subsidies.

These new price levels led the governments to reduce and removing their subsidies, since the costs of these new energies are now competitive with the traditional ones. In the U.S. it is now cheaper to build and generate electricity from solar facilities than traditional ones. The U.S. will bring its ITC to 10% and only for commercial users, while China already started decreasing its overall FIT. The effects of these reductions will mainly be seen on the short term on the overall number of GW installed. The intermittency nature of the solar energy production (resulting from the limited availability of sunlight) explains why the removal of the subsidies should be done at the same time with the development of new battery storages as StorEdge. This would eliminate the intermittency problem and maintain low prices for the consumers.

The current market shows that the subsidies will not be fully cut, but slowly reduced, based on the price progress and industry development. Therefore, it is assumed that the total PV industry growth will not be affected, but instead will maintain the current growth level thanks to the new energy storage technologies and advanced products developed by companies as SolarEdge.

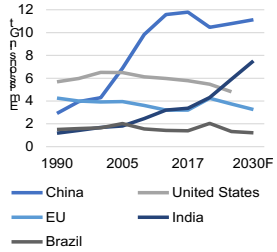
Demand for Sustainability

On September 20th, 2019, around four million[5] people across the globe went to the streets to protest for better climate protection. This day, as part of a bigger movement, represents the strong demand for a more sustainable future.

[3] Source: S&P Global
[4] Source: Company report
[5] Source: The New York Times

- Paris Agreement

Exhibit 45: Greenhouse Gas Emissions by country (in Gt)



Source: Climate Watch

The Paris Agreement is a result of an ongoing pressure by the global population. The goal of this agreement is to prevent the Earth's average temperature from rising more than two degrees Celsius above its level in preindustrial times. Pierre J. Verlinden, founder of AMROCK Pty. Ltd. in Australia, mentions[6] that the planet is on track to reach an increase of four degrees by the end of this century. He considers solar PV as an important factor for achieving this goal and for reaching 100% decarbonized electricity. The Paris Agreement aims to adjust the actions of all nations towards these goals and to support developing countries to do the same. Exhibit 45 shows the efforts of countries to fulfill these targets. Excluding India and China, the countries have lowered their targets and are acting in accordance with the agreement. The outreach that this agreement has, pushes countries to encourage individuals, companies, and governments to use renewable energy, hence, it leads to an increase in solar energy developments.

- ESG

In the investment world, ESG has become a major factor and an industry standard for many different funds. Environmental, social, and governance are the factors at which 33%[7] of assets under management in the U.S. are evaluated. The environmental aspect comes into play for the PV industry, because companies have incentives to be more sustainable. Furthermore, sustainable assets grew by 42% from 2018 until today. By scoring companies on these factors, investors can make more thoughtful decisions and companies are pressured to be more sustainable.

COVID-19 Pandemic

In 2020 the COVID-19 worldwide pandemic hit the world economy and the financial markets. The pandemic has negatively impacted the growth of the PV industry concerning both the demand and supply.

The forecasts already include the impact that COVID-19 virus had on the industry and SolarEdge's profitability. The goal is to estimate how much the virus impacted the valuation. In order to quantify the impact of the event, the valuation in the current scenario was compared to the company's value assuming that the virus outbreak never impacted the world economy.

Firstly, the volume of GW deployed by the PV industry was forecasted by using the market expectations from the IHS Markit report released on the 7th of January for Europe and RoW. Additionally, the U.S. segment was forecasted based on the SEIA 2019 review report. Nevertheless, all these values do not include the volume reductions brought by the virus for the PV industry.

Looking at the data it can be observed that COVID-19 impact will not affect the long-term growth of the PV industry, but rather decrease the amount of GW deployed in the three geographical areas only until 2025. Afterwards, the GW deployed will be the same for both scenarios.

Without the impact of COVID-19, the target price rises to $424.30 which correspond to a +3.65% increase from the base scenario. This small change is due to the fact that the virus impacts the industry only in the short-term.

[6] Source: Journal of Renewable and Sustainable Energy
[7] Source: Market Watch

Valuation

WACC & Growth Rate

To compute the enterprise value (EV), the cash flows were discounted by the previously calculated and estimated different costs of capital. Once these were calculated, the weighted average cost of capitals (WACC) was computed using the Modigliani Miller approach including the tax shield effect.

- Capital Structure

It is believed that the current nature of the sector will evolve and follow a similar pattern to the semiconductor industry. SolarEdge business can relate to this industry, considering that both are influenced by product and technological innovation. Furthermore, the industries have a high level of cash, as can be observed from the net debt in exhibit 46. This is due high cash requirements for continuous product development. Additionally, the R&D expenditures of both industries is high. Therefore, it is expected that the PV equipment industry will share similar characteristics in the mature stage.

Exhibit 46: Semiconductor Capital Structure

Company Name	Net Debt / Total Capital
Intel Corp	9.12%
AMD	-1.71%
NVIDIA Corp	-1.53%
Texas Instr.	1.02%
Qualcomm Inc	0.89%
Micron Tech.	-3.22%
TSM	-3.05%
STM	-2.86%
Broadcom Inc	13.44%
Median	-1.53%
Average	1.34%

Source: Eikon

The sector is highly cyclical and shows a capital structure that keeps fluctuating throughout different years[8]. In the semiconductor businesses the swings are dictated by the industries of the end-users, meaning for SolarEdge it would be the PV sector. The cycles have a direct relation with the capital structures adopted by the companies. During upswing, firms usually tend to raise debt to finance further expansion, on the contrary, in uncertain times and during downturns, companies will raise equity in order to finance new technologies and research leading to the boost of demand again. SolarEdge's level of net debt decreased in the past years and is expected to reach a target level of net D/EV of 0%, similar to the average and median ratios shown by the semiconductor industry and the evolution that the photovoltaic sector will have in the upcoming years. The low levels of debt can be observed due to the risky nature and the uncertainty about future evolution of the PV industry which SolarEdge is dependent from and, therefore, increase volatility regarding the expected revenues for SolarEdge. In addition to this, SolarEdge management stated that they will maintain the main production outsourced through operating leases, therefore not investing high values in PPE and avoid having to raise debt to sustain further expansion.

- Cost of Debt (Rd)

Even though the forecasted capital structure has a Net Debt/EV equal to zero, it was examined that computing the cost of debt of SolarEdge would be useful for further evaluations and understanding of the financial risk level of the firm.

Exhibit 47: Cost of Debt

Cost of Debt	
Interest Coverage Ratio	37,38
Credit Rating	AAA
Default Probability	0,03%
Recovery Rate	53,90%
Loss Given Default	46,10%
YTM	1,56%
Rd	1,55%

Source: Moody's, YCharts, Analysts estimates

To compute the correct cost of debt, the following values were calculated: recovery rate, loss given default (LGD), and the YTM.

SolarEdge never received a credit rating from any rating agencies, this can be explained by the fact that it never issued any form of debt until the 23rd of September when $570M of convertible debt was placed on the market with a maturity of 5 years. Due to the maturity and the nature of this bond, it was decided to compute a synthetic credit rating based on the interest coverage of the company (EBIT/Interest Expenses). This resulted into a factor of 37.38 and therefore, a credit

[8] Kartik Malla (2009). *The Capital Structure Life Cycle of High Technology Industries*

rating of AAA that corresponds to a default probability (PD) of 0.03% in the next 10 years[9] (Moody's Investors Service, "Annual default study"). The applied recovery rate of 53.9% is taken from the Moody's report as well, this value is used to compute the LGD. Due to the nature of the bond, to calculate the YTM of SolarEdge, the 1.56% US Corporate AAA Effective yield[10] was used. This value is expected to be an efficient proxy for SolarEdge's cost of debt because of the low leverage ratio shown by the company.

Lastly, the Rd was computed by using the binomial tree formula by subtracting from the YTM the PD times LGD, obtaining a final Rd of 1.55% (Exhibit 47).

- Cost of Equity (Re)

The Cost of Equity is calculated under the Capital Asset Pricing Model (CAPM), the needed inputs are: Risk-free rate (Rf), Beta Equity (Be) and a Market Risk Premium (MRP).

The Rf of 1.64% was used based on a 30 Year US Treasury bond yield. This bond was chosen to be used since it matches the 30 years forecast duration of the cash flows of the company and is denominated in the same currency as the company's cash flows.

For the MRP, it was decided to use the 4.97% value provided by Damodaran. It is examined that this value reflects the expected return of the market as shown in different academic papers and research[11].

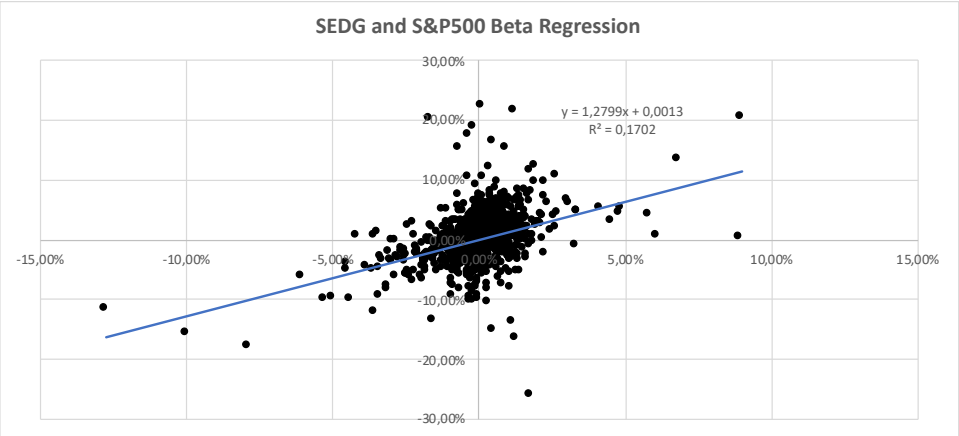
Exhibit 48: Linear Regression Output

Linear Regression		
	Beta	Alpha
Parameters	1,280	0,001
SE	0,080	0,001
R2	0,170	0,034
F-Test	257,769	1257,000
SS reg	0,306	1,491

Source: Analyst estimates

To compute the beta of SolarEdge, a regression between the daily stock returns of SolarEdge and the daily returns from the S&P500 in the last 5 years was conducted (Exhibit 48). This regression was used, as a higher R squared and a smaller standard error (SE) when compared to a monthly regression. This can be explained by the fact that SolarEdge went public only in 2015 and, therefore, does not have a lot of historical data for the regression (Exhibit 49).

Exhibit 49: Linear Regression scatter



Source: Analyst estimates

Exhibit 50: 95% Confidence Interval

Levered Beta 95% CI	
Upper Limit	1,439
Beta Levered	1,280
Lower Limit	1,120
Adjusted Beta	1,187

Source: Analyst estimates

The raw Be calculated from the regression is equal to 1.28, with a 95% confidence interval between 1.12 and 1.439. It was decided to apply the Bloomberg adjusted formula and use the adjusted Beta of 1.187, since it is believed that the value will move closer towards the market in the long term (Exhibit 50). The level of beta above one can be explained by the nature of uncertainty that affects the overall solar industry, as it can be seen in the betas of SolarEdge's

[9] Source: Moody's (2017). *Annual default study: Corporate default and recovery rates, 1920-2017*
[10] Source: YCharts
[11] Source: Tim Koller, Marc Goedhart, David Wessels (2016). *Measuring and managing the value of companies*,
Pablo Fernandez, Eduardo de Apellaniz, Javier Acin (2020). *Market risk premium and risk-free rate used for 81 countries in 2020*

peers (Exhibit 51). These indicators were used to compute an industry unlevered beta (Bu), afterwards, it was re-levered by applying SolarEdge's forecasted capital structure in order to be compared with the final Be levered. As it can be seen, the two calculated Betas show similar values, it was assumed that the Beta Equity calculated through the linear regression is a valid estimate for the calculations.

Exhibit 51: Peers & Industry Betas

Ticker	Name	Beta Levered	Debt/EV	Equity/EV	Debt/Equity	Beta Unlevered
ENPH US Equity	Enphase	1.140	3.83%	96.17%	3.99%	1.096
S92 GR Equity	SMA	1.530			8.45%	1.411
SEDG US Equity	SolarEdge	1.280	3.95%	96.05%	4.11%	1.229
Average	Average	1.317	3.89%	96.11%	5.52%	1.245
SEDG US Equity	SEDG Relevered Beta					1.245

Source: Yahoo finance, Analyst estimates

Moreover, the Bu was computed through the current capital structure of the company, therefore, by applying the CAPM, it provided the 7.66% unlevered cost of capital (Ru).

In order to find the Be levered, the previously mentioned expected capital structure values were applied, resulting in the reach of Be levered equal to 1.21.

Lastly, a cost of equity of 7.66% was calculated by applying the CAPM.

- Weighted Average Cost of Capital

Exhibit 52: WACC calculation

WACC	
Net Financial Debt	-355.770
Current Price	319
# Shares	50.118.548
Equity Value	15.987.817
Risk Free	1,64%
Market Return	6,61%
E/EV (Current)	102%
D/EV (Current)	-2%
E/EV (Forecasted)	100%
D/EV (Forecasted)	0%
Tax Rate	21%
Be (Past)	1,187
Bd	-0,02
Bu	1,21
Be (New)	1,214
Rd	1,55%
Re (Past)	7,54%
Ru	7,67%
Re (New)	7,67%
WACC (Past)	7,68%
WACC (New)	7,67%

Source: Analyst estimates

After that all the costs of capital were calculated and the forecasted capital structure assumed, the weighted average cost of capital (WACC) was computed by applying the Modigliani-Miller formula, including the tax shield effect. SolarEdge's WACC is equal to 7.66% (Exhibit 52). It can be observed how the WACC has the same value of Ru and Re. This can be explained by the fact that the expected capital structure of SolarEdge shows a net debt level of 0%. Therefore, the cost of debt does not have any direct impact on the final calculations for the WACC as previously anticipated.

- Growth Rate (g)

The growth rate forecasted in 2050 was assumed to calculate the terminal value. This rate was applied since both, the growth rates calculated from the operating FCFs and the one by multiplying the RR and RONIC in 2050, are close to each other. In addition to this, the model shows how the rates are stable in the years before supporting the decision to apply the 4.69% growth rate from 2050.

After deciding which growth rate to apply for the continuation value, the reality check was performed, in order to control that the growth rate in real terms would not exceed the real GDP Growth. To the 4.69% (Exhibit 53) growth rate was subtracted the expected 2% inflation[12] for the U.S., since the cash flows' currency is USD. Subsequently, the computed real growth rate of 2.69% was compared with the 2.9% long-term expected world GDP real growth[13]. The

Exhibit 53: Growth Rate

Operating	2048	2049	2050
NOPLAT	2.744.771	2.879.085	3.020.647
Core Invested Capital	5.930.628	6.213.989	6.512.623
ROIC	48%	49%	49%
Operating FCF	2.475.838	2.595.724	2.722.013
Operating FCF g	5%	5%	5%
RR	10%	10%	10%
RR	10%	10%	10%
RONIC	47%	47%	47%
g	4,64%	4,67%	4,69%

Source: Analyst estimates

[12] Source: Federal Reserve
[13] Source: PWC (2015). The world in 2050

calculated real growth rate for SolarEdge resulted smaller than the expected long-term world GDP.

After this check, the operating growth rate to calculate the terminal value (TV) was applied through the perpetuity formula. The overall company "g" was used, because it is believed that the non-operating items will not grow at the same rate as the operating.

Discounted Cash Flow (DCF)

Exhibit 54: DCF

Values	DCF
PV FCF	20.516.593.436
Enterprise Value	20.516.593.436
Net Debt	0
Equity	20.516.593.436
# Shares	50.118.548
Price	$ 409,36

Source: Analyst estimates

Using the projected FCFs, as well as the computed WACC and growth rate, the expected EV of SolarEdge was calculated at the end of 2021. The FCF in 2050 was used to calculate the TV by applying the perpetual growing formula. The TV was then yearly discounted by the WACC and adding the FCFs of the respective periods. The final discounted value plus the expected non-operating value for 2021 represents the EV of the firm. An EV of $20,516,948,162 was found. This value corresponds to the equity since, as explained before, the net financial debt is forecasted to be zero in the future years. Dividing the equity by the current number of Shares 50,118,548 a final price per share of $409.37 was computed (Exhibit 54). This price corresponds to a "Buy" recommendation with an expected increase in price of +28.33%.

Multiples Valuation

Even though it is believed that the DCF method assess the most correct value for SolarEdge due to the small number of peers, a multiples valuation was performed. This was done in order to understand how the market is valuing SolarEdge and its two main competitors Enphase and SMA Solar (the same peers previously adopted to calculate the industry beta).

Forward estimates were used since these values compute better multiples and tend to show lower variation across industry peers when compared to the multiples computed through historical data.

The overall EV/EBITDA multiple was identified first for the semiconductor industry. As previously mentioned, this industry is the best proxy for SolarEdge and its competitors. The semiconductor industry multiple of 13.7 was identified by analyzing 72 different firms. The multiples found in the analysis are exponentially higher when compared to this industry average. This difference can be explained by the high growth that the three firms and the solar inverter industry are currently experiencing, as well as the high growth opportunities that the energy storage solutions have in international markets.

Firstly, the forward P/E (Fwd) was analyzed, then the EV/EBITA (Fwd) and lastly the EV/Sales (Fwd) of the three firms. This was done in order to understand how the market is currently valuing the different companies and has led to the identification of the reasoning behind the different pricing of the companies.

Exhibit 56: SolarEdge EBITA calculation

SolarEdge	
Market Cap	16.342.000
Earnings	222.000
EV	15.166.000
EBITDA	255.000
Depreciation	22.000
EBITA	233.000
EV / EBITA	65,09
P/E	73,61

Source: Analyst estimates, finbox

By looking at the P/E (Exhibit 55), it can be observed how Enphase and SMA Solar show a higher market cap relative to their future expected earnings with two P/E values around 125, while SolarEdge shows a P/E of 73.6.

Exhibit 55: Forward Price to Earnings ratio

P/E (Fwd)					
Ticker	Name	2020	2021	2022	2023
SEDG US Equity	SOLAREDGE TECHNOLOGIES INC	73,6	56,4	44,4	35,1
ENPH US Equity	ENPHASE ENERGY INC	124,9	82,8	60,3	48,8
S92 GR Equity	SMA SOLAR TECHNOLOGY AG	125,6	68,1	50,8	49,1

Source: Finbox

Since the P/E can be influenced by the capital structures of the three firms, it should be compared to the EV/EBITA in order to see if the firms show the same values. The EBITDA was not used since the different types of productions models could influence the value and distort the multiples. This can be observed by looking at the difference between the two multiples for SMA Solar. Therefore, the depreciation was deducted from the expected EBITDA for 2020 and found for all the three companies the related EV/EBITA (Exhibit 56-59).

Exhibit 57: Enphase EBITA calculations

Enphase	
Market Cap	21.847.000
Earnings	174.900
EV	21.217.000
EBITDA	183.300
Depreciation	-
EBITA	183.300
EV / EBITA	115,75
P/E	124,91

Source: Analyst estimates, finbox

It can be detected again how Enphase and SMA Solar show higher multiples when compared to SolarEdge. The difference between SolarEdge and Enphase multiples can be explained by the expectations that the overall investors have about future Enphase revenues and profitability growth. Enphase's revenues grew by 127% (TTM), while SolarEdge's revenues growth reached 67% (TTM)[14]. The higher growth rate, as well as the ability of Enphase to increase its market share against SolarEdge in number of units sold and the capability to increase its gross margin from 18% to 35% in 4 years, explain why the market is currently valuing Enphase at higher values.

Exhibit 59: Forward Enterprise Value on EBITDA

EV/EBITDA (Fwd)					
Ticker	Name	2020	2021	2022	2023
SEDG US Equity	SOLAREDGE TECHNOLOGIES INC	59,5	44,7	32,7	26
ENPH US Equity	ENPHASE ENERGY INC	115,4	67	49,3	40,2
S92 GR Equity	SMA SOLAR TECHNOLOGY AG	28,9	20,5	17,5	16,9

Source: Finbox

Exhibit 58: SMA Solar EBITA calculations

SMA Solar	
Market Cap	2,382,000
Earnings	18,968
EV	1,800,400
EBITDA	62,500
Depreciation	48,200
EBITA	14,300
EV / EBITA	125.90
P/E	125.58

Source: Analyst estimates, finbox

Regarding SMA Solar, the firm experienced a decrease in their level for the gross margin, from 26% in 2016 to 9% in 2018. The firm was able to bring their gross margin back to 18% in 2019 and the market is expecting to see a positive income again after 2 years of negative values. Therefore, to correctly value SMA Solar it is better to analyze the EV/Sales (Fwd) due to the negative profit observed in past years and the small level of profitability of the firm. Indeed, it can be seen how the EV/Sales is much lower than SolarEdge and Enphase, hence, confirming that SMA Solar is trading at a discount when related to its two competitors due to the low level of profitability that the firm achieved in the past years and the difficulties related their revenues growth (Exhibit 60).

Exhibit 60: Forward Enterprise Value on Sales

EV/Sales (Fwd)					
Ticker	Name	2020	2021	2022	2023
SEDG US Equity	SOLAREDGE TECHNOLOGIES INC	10,8	8,9	7,3	6,5
ENPH US Equity	ENPHASE ENERGY INC	28,6	17,6	14,1	12,5
S92 GR Equity	SMA SOLAR TECHNOLOGY AG	1,7	1,6	1,5	1,5

Source: Finbox

In conclusion, it can be detected that the market is currently valuing Enphase above SolarEdge. This is due to the high profitability, revenue growth and increase in market share that Enphase obtained in Q3, especially in the U.S. market. Regarding SMA Solar, at first it seems that the firm would be overvalued by the market, but after further analysis it can be confirmed that its price reflects the growth and values reached by its revenues in the past years.

Scenario Analysis

Due to the current unpredictable market situation and the previously explained assumptions directly impacting the results of the model, the decision to create 3 different scenarios with the

[14] Source: YCharts

respective probabilities was taken, in order to understand how the final target price would react. The different circumstances are based on two different variables: the market shares growth rates and the expected gross margin that SolarEdge will maintain in the upcoming years.

The base scenario is the one with the highest probability of happening - 70%. In this scenario the assumption was that SolarEdge will be able to increase its market share in all the locations for both commercial and residential sectors, until 2030. Furthermore, remaining stable for the following years, except for the residential sector in the RoW geographic area, where the assumption was that the market share decreases by 2,6% due to the strong growth that this sector is expected to achieve in the future. In addition to this, it is expected that SolarEdge will be able to maintain its Gross Margin level of 35% for the whole period. This scenario leads to a price target of $409.37 with an expected return of +28.33% and therefore to a “BUY” recommendation.

Regarding the worst scenario, the assumed probability was 20%. In this scenario it was predicted that SolarEdge would not be able to increase its market shares in the commercial sector, while instead lose market share in the residential sector for each geographic area, as it happened in Q3 2020 in the US market due to the strong growth achieved by Enphase. A lower gross margin of 30% was applied for the forecasted period, assuming that SolarEdge would not be able to develop new technologies and maintain their advanced position in the market. In this scenario the target stock price decreases to $92.17, an expected return of -71.11% and a “SELL” recommendation.

Subsequently, as a best scenario, with a probability of 10%, a stronger market share is anticipated in both commercial and residential markets assuming that SolarEdge would be able to develop new advanced and more efficient technologies comparing to its competitors. This would provide them with an advantage above its competitors, boosting its market share and increase the gross margin to 40% thanks to these more profitable and innovative technologies. In this scenario a target price of $734.00 and +130.10% expected return can be observed.

Lastly, all three different scenarios were combined by applying the respective probabilities. The final target price of $401.05 was attained, with a +27.52%, showing once again the potential upside that SolarEdge stock price could reach (Exhibit 61).

Exhibit 61: Forecasted scenarios

	Gross Margin	Market Shares	Probability	Price	Shareholder Capital Gain	Recommendation
Worst	30%	Loss in residential and not growing in commercial	20,00%	$ 92,17	-71,11%	SELL
Base	33%	Growth in residential and commercial	70,00%	$ 409,37	28,33%	BUY
Best	40%	Stronger growth in both residential and commercial	10,00%	$ 734,00	130,10%	BUY
Expected Price				**$ 378,39**	**18,62%**	**BUY**

Source: Analyst estimates

Sensitivity Analysis

The Enterprise Value (EV) and the price per share obtained by the valuation methods are significantly affected by their key variables. The two main drivers are the WACC and the Growth rate since they impact the terminal value and the discounting process when calculating the EV. Therefore, a sensitivity analysis was conducted to understand how much the changes in these values would affect the price target.

Before analyzing the EV, it is preferable to estimate the maximum and minimum values that g and the WACC could reach. For this reason, two sensitivity tables were built, showing the possible values to be reached by these drivers when Re, Rd, RONIC and RR change.

After having computed the maximum and minimum values that the cost of debt and cost of equity

would possibly achieve, the first table was observed in order to understand how the WACC would change in relation to these indicators. As expected, the WACC is influenced only by the Re due to the assumed capital structure. The interval in which the WACC varies is 8.79% and 7.21%.

The same approach was then used to evaluate the interval for the long-term growth rate used to calculate the continuation value. The growth rate reaches a maximum value of 5.94% and a minimum of 4.15% related to the different rates that can be achieved by the RR and RONIC.

Lastly, three tables were computed to understand how the EV, TV and final stock price would be affected by the different values of WACC and g. It can be concluded that the maximum price of $831 for SolarEdge would be achieved when the WACC would reach the smaller amount while the growth rate attains its bigger value, leading to a strong increase of the TV. However, the lower price is achieved by a WACC of 8.78% and a growth rate of 4.15%. These two values would compute a stock price of $259 (Exhibit 62).

Exhibit 62: Price sensitivity

Target Price			
Growth Rate\WACC	**7%**	**8%**	**8,79%**
4,15%	435	338	259
4,95%	533	390	287
5,94%	831	516	342

Source: Analyst estimates